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DISCOVERIES AND INVENTIONS

A LECTURE BY
ABRAHAM LINCOLN
DELIVERED IN
1860

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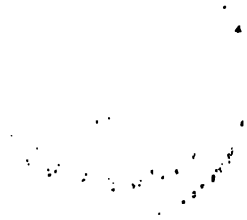

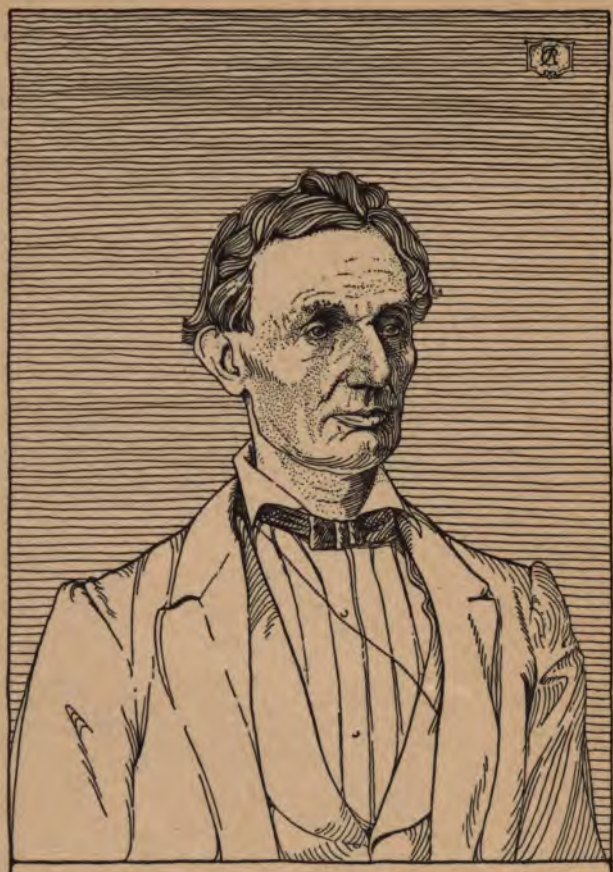

Abraham Lincoln

DISCOVERIES AND INVENTIONS

A LECTURE BY
ABRAHAM LINCOLN
DELIVERED IN
1860

SAN FRANCISCO
JOHN HOWELL
1915

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A PREFATORY NOTE

The Lecture—"Discoveries and Inventions"—by our greatest American, presents a phase of Lincoln's activity about which little is generally known. It shows as clearly as any of his other writings how great was Lincoln's knowledge of the progress of mankind, particularly as related in the Bible, and it reveals also his debt to that Book of Books for inspiration and illustration, as well as his masterly use of pure English, largely gained through that study.

In the fateful year of 1860, the year of his election to the presidency, Lincoln took up, in the pause of his affairs after the long debate with Douglas, the custom of lyceum lecturing, then in great

vogue. This lecture on "Discoveries and Inventions" was delivered in towns near his home, Springfield, Illinois, and in Springfield itself on Washington's birthday. Five days later Lincoln made his great speech at Cooper Union in New York.

The lecture is not included with any collection of Lincoln's addresses. It appeared in print for the first time in Sunset Magazine *in 1909—the centennial of Lincoln's birth.*

The original manuscript, from which this edition, the first in book form, is made, was a cherished possession of the late Dr. Samuel Houston Melvin, of Oakland, California, formerly a resident of Springfield, Illinois, and a friend of Mr. Lincoln. Just prior to Dr. Melvin's death, in 1898, he made

an affidavit setting forth the history of the manuscript; that statement is as follows:

MEMORANDUM OF
CERTAIN FACTS FOR INFORMATION OF
THOSE WHO FOLLOW AFTER

In the month of February, 1861, being at that time a resident of Springfield, Illinois, I called one evening at the residence of my friend, Dr. John Todd. The doctor was an uncle of Mrs. Abraham Lincoln. While there Mr. Lincoln came in, bringing with him a well-filled satchel, remarking as he set it down that it contained his literary bureau. Mr. Lincoln remained some fifteen or twenty minutes, conversing mainly about the details of his prospective trip to Washington the following week, and told us of the arrangements agreed upon for the family to follow him a few days later. When about to leave he handed the grip above referred to to Mrs. Grimsley, the only daughter of Dr. Todd, who was then a widow but who subsequently became the wife of Rev. Dr. John H. Brown, a Presbyterian minister located in Springfield, remarking as he did so that he would leave the bureau in her charge; that if he ever returned to Springfield he would claim it, but if not she might make such disposition of its contents as she deemed proper. A tone of indescribable sadness was

noted in the latter part of the sentence. Lincoln had shown me quite a number of letters a few days before, threatening his life, some predicting that he never would be inaugurated, and it was apparent to me that they were making an impression upon his mind, although he tried to laugh the matter off. About five years later the Nation was startled by the announcement of Lincoln's assassination. The corporation of Springfield selected twelve of its citizens to proceed at once to Washington and accompany the remains of the dead President back to his old home. I was one of that number, and shall never forget the indescribable sadness manifested by millions of mourners along the route of travel of the funeral cortège as it wended its way westward over two thousand miles. A few evenings after his body was laid to rest, I again called upon my neighbors, the family of Dr. Todd. Scenes and incidents connected with the assassination and funeral of the dead President were discussed, and the remark made by Lincoln on his last visit to the house was referred to as indicating a presentiment that he would not return alive. This recalled the fact of his having left his so-called literary bureau, and his injunction as to its disposition. Mrs. Grimsley brought the grip from the place where it had been stored, and opened it with a view to examining its contents. Among them was found this manuscript, and attached to it by means of a piece of red tape was another of like character. They proved to be manuscripts of two

lectures which he had prepared and delivered within a year prior to his election to the presidency—one at Jacksonville, Illinois, and a few days later at Decatur, Illinois; the other a little later at Cook's Hall, Springfield, Illinois, at which I was present. Mrs. Grimsley told me to select from the contents of the bureau any one of the manuscripts it contained; and supposing at that time that the two manuscripts belonged to the same lecture, I selected them. On subsequent examination I discovered that while they both treated upon the same subject (Inventions and Discoveries) they were separate lectures. Twenty-five years later I disposed of one of the manuscripts to Mr. Gunther of Chicago. The other it is my hope and desire shall remain in possession of my family and its descendants.*

The manuscript is now owned by Dr. Melvin's son, the Honorable Henry A. Melvin, a Justice of the Supreme Court of California, through whose courtesy this edition is published.

*This was published in "Addresses and Letters of Lincoln," The Century Company, 1904.

DISCOVERIES AND INVENTIONS

A LECTURE BY
ABRAHAM LINCOLN

ALL creation is a mine, and every man a miner.

The whole earth, and all *within* it, *upon* it, and *round about* it, including *himself*, in his physical, moral, and intellectual nature, and his susceptibilities, are the infinitely various "leads" from which, man, from the first, was to dig out his destiny.

In the beginning, the mine was unopened, and the miner stood *naked*, and *knowledgeless*, upon it.

Fishes, birds, beasts, and creeping things, are not miners, but *feeders* and *lodgers* merely. Beavers build houses; but they build them in nowise differently, or better now, than they did, five thousand years ago. Ants and honey bees provide food for winter; but just in the *same way* they did, when Solomon referred the sluggard to them as patterns of prudence.

Man is not the only animal who labors; but he is the only one who *improves* his workmanship. This improvement he effects

by *Discoveries* and *Inventions*. His first important discovery was the fact that he was naked; and his first invention was the fig-leaf apron. This simple article, the apron, made of leaves, seems to have been the origin of *clothing*—the one thing for which nearly half of the toil and care of the human race has ever since been expended. The most important improvement ever made in connection with clothing, was the invention of *spinning* and *weaving*. The spinning jenny, and power loom, invented in modern times, though great *improvements*, do not, *as inventions*, rank with the ancient arts of spinning and weaving. Spinning and weaving brought into the department of clothing such abundance and variety of material. Wool, the hair of several species of animals, hemp, flax, cotton, silk, and perhaps other articles, were all suited to it, affording garments not only adapted to wet and dry, heat and cold, but also susceptible of high degrees of ornamental finish. Exactly *when*, or *where*, spinning and weaving originated is not known. At the first interview of the Almighty with Adam and Eve, after the fall, He made

"coats of skins, and clothed them" (Genesis iii: 21).

The Bible makes no other allusion to clothing, *before* the flood. Soon *after* the deluge Noah's two sons covered him with a *garment;* but of what *material* the garment was made is not mentioned (Genesis ix: 23).

Abraham mentions "*thread*" in such connection as to indicate that spinning and weaving were in use in his day (Genesis xiv: 23), and soon after, reference to the art is frequently made. "*Linen breeches*" are mentioned (Exodus xxviii: 42), and it is said "all the women that were wise-hearted did *spin* with their hands" (Exodus xxxv: 25), and, "all the women whose heart stirred them up in wisdom *spun* goats' hair" (Exodus xxxv: 26). The work of the "*weaver*" is mentioned (Exodus xxxv: 35). In the book of Job, a very old book, date not exactly known, the "*weavers' shuttle*" is mentioned.

The above mention of "*thread*" by Abraham is the oldest recorded allusion to spinning and weaving; and *it* was made about two thousand years after the creation of man, and now, near four thousand years ago. Profane

authors think these arts originated in Egypt; and this is not contradicted, or made improbable, by anything in the Bible; for the allusion of Abraham, mentioned, was not made until after he had sojourned in Egypt.

The discovery of the properties of *iron*, and the making of *iron tools*, must have been among the earliest of important discoveries and inventions. We can scarcely conceive the possibility of making much of anything else, without the use of iron tools. Indeed, an iron *hammer* must have been very much needed to make the *first* iron hammer with. A *stone* probably served as a substitute. How could the "*gopher wood*" for the Ark have been gotten out without an axe? It seems to me an axe, or a miracle, was indispensable. Corresponding with the prime necessity for iron, we find at least one very early notice of it. Tubal-Cain was "an instructor of every artificer in *brass* and *iron*" (Genesis iv: 22). Tubal-Cain was the seventh in descent from Adam; and his birth was about one thousand years before the flood. *After* the flood, frequent mention is made of *iron*, and *instruments* made of iron. Thus "instrument of

iron" at Numbers xxxv: 16; "bedstead of iron" at Deuteronomy iii: 11; "the iron furnace" at Deuteronomy iv: 20, and "iron tool" at Deuteronomy xxvii: 5. At Deuteronomy xix: 5, very distinct mention of "the ax to cut down the tree" is made; and also at Deuteronomy viii: 9, the promised land is described as "a land whose stones are iron, and out of whose hills thou mayest dig brass." From the somewhat frequent mention of brass in connection with iron, it is not improbable that brass—perhaps what we now call copper—was used by the ancients for some of the same purposes as iron.

Transportation—the removal of person and goods from place to place—would be an early *object*, if not a *necessity*, with man. By his natural powers of locomotion, and without much assistance from discovery and invention, he could move himself about with considerable facility; and even, could carry small burthens with him. But very soon he would wish to lessen the labor, while he might, at the same time, extend, and expedite the business. For this object, wheel-carriages, and water-crafts—wagons and boats—are the most

important inventions. The use of the wheel and axle has been so long known, that it is difficult, without reflection, to estimate it at its true value. The oldest recorded allusion to the wheel and axle is the mention of a "chariot" (Genesis xli: 43). This was in Egypt, upon the occasion of Joseph being made governor by Pharaoh. It was about twenty-five hundred years after the creation of Adam. That the chariot then mentioned was a wheel-carriage drawn by animals is sufficiently evidenced by the mention of chariot *wheels* (Exodus xiv: 25), and the mention of chariots in connection with *horses* in the same chapter, verses 9 and 23. So much, at present, for land transportation.

Now, as to transportation by *water*, I have concluded, without sufficient authority perhaps, to use the term "boat" as a general name for all water-craft. The boat is indispensable to navigation. It is not probable that the philosophical principle upon which the use of the boat primarily depends—to-wit, the *principle*, that anything will float, which cannot sink without displacing more than its own *weight* of water—was known,

or even thought of, before the first boats were made. The sight of a crow standing on a piece of driftwood floating down the swollen current of a creek or river, might well enough suggest the specific idea to a savage, that he could himself get upon a log, or on two logs tied together, and somehow work his way to the opposite shore of the same stream. Such a suggestion, so taken, would be the birth of navigation; and such, not improbably, it really was. The leading idea was thus caught; and whatever came afterwards, were but improvements upon, and auxiliaries to, it.

As man is a land animal, it might be expected he would learn to travel by land somewhat earlier than he would by water. Still the crossing of streams, somewhat too deep for wading, would be an early necessity with him. If we pass by the Ark, which may be regarded as belonging rather to the *miraculous* than to *human* invention, the first notice we have of water-craft is the mention of "ships" by Jacob (Genesis xlix: 13). It is not till we reach the book of Isaiah that we meet with the mention of "oars" and "sails."

As man's *food*—his first necessity—was to

be derived from the vegetation of the earth, it was natural that his first care should be directed to the assistance of that vegetation. And accordingly we find that, even before the fall, the man was put into the garden of Eden "to dress it, and to keep it." And when afterwards, in consequence of the first transgression, *labor* was imposed on the race, as a *penalty*—a *curse*—we find the first born man—the first heir of the curse—was "a tiller of the ground." This was the beginning of agriculture; and although, both in point of time, and of importance, it stands at the head of all branches of human industry, it has derived less direct advantage from Discovery and Invention, than almost any other. The plow, of very early origin; and reaping, and threshing, machines, of modern invention are, at this day, the principal improvements in agriculture. And even the oldest of these, the plow, could not have been conceived of, until a precedent conception had been caught, and put into practice—I mean the conception, or idea, of substituting other forces in nature, for man's own muscular power. These other forces, as now used, are principally, the

strength of animals, and the *power* of the wind, of running streams, and of steam.

Climbing upon the back of an animal, and making it carry us, might not occur very readily. I think the back of the camel would never have suggested it. It was, however, a matter of vast importance. The earliest instance of it mentioned, is when "Abraham rose up early in the morning, and saddled his ass" (Genesis xxii: 3), preparatory to sacrificing Isaac as a burnt-offering; but the allusion to the *saddle* indicates that riding had been in use some time; for it is quite probable they rode bare-backed awhile, at least, before they invented saddles.

The *idea*, being once conceived, of riding *one* species of animals, would soon be extended to others. Accordingly we find that when the servant of Abraham went in search of a wife for Isaac, he took ten *camels* with him; and, on his return trip, "Rebekah arose, and her damsels, and they rode upon the camels, and followed the man" (Genesis xxiv: 61).

The *horse*, too, as a riding animal, is mentioned early. The Red Sea being safely passed,

Moses and the children of Israel sang to the Lord "the *horse* and his *rider* hath he thrown into the sea" (Exodus xv: 1).

Seeing that animals could bear *man* upon their backs, it would soon occur that they could also bear other burthens. Accordingly we find that Joseph's brethren, on their first visit to Egypt, "laded their asses with the corn, and departed thence" (Genesis xlii: 26).

Also it would occur that animals could be made to *draw* burthens *after* them, as well as to bear them upon their backs; and hence plows and chariots came into use early enough to be often mentioned in the books of Moses (Deuteronomy xxii: 10; Genesis xli: 43; xlvi: 29; Exodus xiv: 25).

Of all the forces of nature, I should think the *wind* contains the largest amount of *motive power*—that is, power to move things. Take any given space of the earth's surface—for instance, Illinois; and all the power exerted by all the men, and beasts, and running-water, and steam, over and upon it, shall not equal the one hundredth part of what is exerted by the blowing of the wind over and upon the same space. And yet it has not, so

far in the world's history, become proportionably *valuable* as a motive power. It is applied extensively, and advantageously, to sail-vessels in navigation. Add to this a few windmills, and pumps, and you have about all. That, as yet, no very successful mode of *controlling*, and *directing* the wind, has been discovered; and that, naturally, it moves by fits and starts—now so gently as to scarcely stir a leaf, and now so roughly as to level a forest—doubtless have been the insurmountable difficulties. As yet, the wind is an *untamed*, and *unharnessed* force; and quite possibly one of the greatest discoveries hereafter to be made, will be the taming, and harnessing of it. That the difficulties of controlling this power are very great is quite evident by the fact that they have already been perceived, and struggled with more than three thousand years; for that power was applied to sail-vessels, at least as early as the time of the prophet Isaiah.

In speaking of *running streams*, as a motive power, I mean its application to mills and other machinery by means of the "*water wheel*"—a thing now well known, and extensively used; but, of which, no mention is

made in the Bible, though it is thought to have been in use among the Romans. (Am. Ency.-Mill), the language of the Saviour "Two women shall be grinding at the mill, etc." indicates that, even in the populous city of Jerusalem, at that day, mills were operated by hand—having, as yet had no other than human power applied to them.

The advantageous use of *Steam-power* is, unquestionably, a modern discovery. And yet, as much as two thousand years ago the power of steam was not only observed, but an ingenious toy was actually made and put in motion by it, at Alexandria in Egypt. What appears strange is, that neither the inventor of the toy, nor any one else, for so long a time afterwards, should perceive that steam would move *useful* machinery as well as a toy.

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